Evaluating the Use of the Private Ambulance as a Patient Transport Service Within the Akron Fire Department.

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CERTIFICATION STATEMENT

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ABSTRACT

The City of Akron Fire Department (AFD) responds to all EMS calls within the City of Akron. AFD ambulance personnel treat, and transport the emergency patient to the hospital; the non-emergency patient is transferred to a private ambulance service for transport.

The problem this study addressed was to evaluate the cause behind complaints involving the use of this private ambulance service. The purpose of this study was to present the results of the study to the City of Akron Administration for review. Evaluative as well as Descriptive research was used to answer the following research questions:

1. Does waiting for a private ambulance response cause a delay in the transport times of the AFD EMS patient?
2. Does the transfer of patient care from the AFD ambulance to the private ambulance service generate complaints?
3. What would be the impact on fire suppression coverage when the AFD ambulance conducts the non-emergency transport?
4. What would be the financial gain generated if the transport and subsequent billing of the non-emergency patient was conducted by the AFD?

Research was conducted using a survey sent to the paramedics employed by AFD. AFD ambulance turn-around-times were analyzed in order to address the impact on fire suppression apparatus being out-of-service. A financial analysis of AFD ambulance billing was completed to look at revenue generated.

The results of the research reflected a trade off. If AFD were to conduct all patient transports the benefits would be seen in reduced complaints, and less chance for errors in the

medical care of the patient. There would also be a financial gain to the City of Akron through the subsequent ambulance billing. The down side to AFD conducting all patient transports would be that their ambulances would be out-of-service for a longer period of time leading to a reduction in fire suppression coverage. The concluding recommendation was that AFD select a group of AFD ambulances to conduct all ambulance transports for a trial study.

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INTRODUCTION

Statement of the Problem

It is the longstanding policy of the City of Akron Fire Department to utilize a private ambulance service to transport the *non-emergency* EMS patient to an area hospital. When necessary an Akron Fire Department medical unit will transport the *emergency* EMS patient to those same hospitals.

Complaints from a variety of sources regarding the use of this private ambulance service have been received by the City of Akron Fire Department Administration. These complaints should be subdivided into three areas of concern:

1. Complaints that center on the delayed response time of the private ambulance. A private ambulance response time that exceeds 15 minutes mandates that the Akron Fire ambulance initiates the transport. The response time starts when the Akron Fire Dispatcher calls for the private ambulance and ends when the private ambulance arrives on scene. Out of the total number of patients transported by an Akron Fire ambulance in 2011, 11% were transported because of this delay (Akron Fire Incident Reporting System, 2012).

2. Complaints that involve any criterion that violates medical protocol. In 2011, 58% of the medical complaints filed with the Akron Fire Department involved the use of the private ambulance service according to the Quality Assurance Quality Coordinator for Akron Fire (personal communication, July 30, 2012).

3. Complaints that involve the billing that is being conducted by the private ambulance service for the non-emergency transport of the Akron Fire EMS patient. These complaints are from the patients themselves and generally focus upon the dollar amount and billing practice of the private ambulance service.

The problem this study will address is to evaluate the cause behind these complaints.

The Akron Fire Department must be proactive in the development and adoption of changes to its structure and policies. This policy will need to be reviewed by the Akron Fire Department in order to address the changing needs of the City and its community.

Purpose of the Study

The purpose of this study is to identify and explore the causes behind the complaints involving the use of the private ambulance. These results will be presented to the City of Akron Administration to evaluate if a new operating model should be adopted by the Akron Fire Department.

Research Questions

Evaluative as well as Descriptive (Survey) research will be used to study the following research questions:

1. Does waiting for a private ambulance response cause a delay in the transport times of the Akron Fire EMS patient?
2. Does the transfer of patient care from the Akron Fire ambulance to the private ambulance service generate complaints?
3. What would be the impact on fire suppression coverage when the Akron Fire ambulance conducts the non-emergency transport?
4. What would be the financial gain generated if the transport and subsequent billing of the non-emergency patient was conducted by the Akron Fire Department?

BACKGROUND AND SIGNIFICANCE

The City of Akron supports a population of 199,110 according to the latest Census Bureau statistics (US Census Bureau, 2012). This City population exists is an urban environment that covers 62 square miles. The Akron Fire Department has an authorized strength of 392 personnel but due to financial constraints is currently operating with 326 emergency responders. Of those 326 personnel, 148 are certified at the paramedic level with the balance of 178 certified at the EMT-basic level.

As a general rule the Akron Fire Department operates on what is internally considered a *combo system.* The fire personnel assigned to a particular fire station will respond to an EMS call in an ambulance while the corresponding engine or ladder truck will remain out-of-service back at the station. All Akron Fire ambulances respond with Advanced Life Support Level capabilities with a minimum of two paramedics in the crew (Akron City Code of Ordinance, Title II, Chapter III, Article I).

By City Ordinance the Akron Fire Department is the primary responder for all fire or EMS related events (Akron City Code of Ordinances, Title II, Chapter III, Article I). At a medical incident the Akron Fire paramedic will evaluate the EMS patient using a tiered model that places them into the following medical categories as defined by Akron Fire Protocol (Akron Fire Department Paramedic Protocol, 2012):

Code One. The patient does not require ambulance transport to the hospital.

Code Two. The patient is deemed to be a non-emergency transport. This transport is typically conducted by a private ambulance which is called to the scene by Akron Fire.

Code Three. The patient is deemed to be an emergency transport. This transport is typically conducted by the Akron Fire ambulance.

This model has been in effect in this basic form since 1978 at the inception of City based EMS with only five ambulances available within Akron Fire. What has changed is that the number of EMS runs within the City steadily increasing in numbers every year. Akron Fire is now operating using 13 ALS ambulances with the paramedic performing increasingly complicated procedures. Hospital transport times have become more critical than ever before.

In 2011 Akron Fire responded to 35,232 EMS runs with 20,256 resulting in transports to area hospitals. These transports further break down to 13,297 private ambulance transports and 6,959 Akron Fire ambulance transports (Akron Fire Incident Reporting System, 2012).

To look at those 20,256 transports another way you will see the majority (66%) of those patients were transported by a private ambulance service and the minority (34%) of those patients were transported by an Akron Fire ambulance. These figures are significant in that they reflect on how Akron Fire relies heavily on the private ambulance service as a transport mechanism.

The City of Akron utilizes ambulance billing. When an Akron Fire ambulance transports the patient a set fee is billed. This billing practice is considered “soft billing” for any resident of the City of Akron. Only the payment made by insurance is collected, the portion of the bill that is not covered by insurance is waived by the City. This ambulance billing is conducted by an outside billing agency that is contracted by the City of Akron.

In 2011 the City of Akron collected $1,715,486 for the emergency medical transports conducted by the Akron Fire ambulance. This was the result of a 51% collection rate as reported by Life Force billing agency. (Original Account Type Summary Report, March 28, 2012). One

must keep in mind that this amount is based upon the figure of 6,959 patients being transported by Akron Fire in 2011 as previously reported.

We must also consider the potential revenue that could have been generated for the City of Akron based on the figure of 13,297 patients that Akron Fire turned over to the private ambulance service for hospital transport in 2011.

Akron Fire is similar to most Fire Service organizations in that tradition is held in high regard by the work force. But one must look objectively to see if tradition is overriding reason in the continued use of the private ambulance. Traditional thinking is that the use of the private ambulance is necessary in order to keep the Akron Fire Department resources available. However City Administration should be made aware of the additional revenue that could be obtained by having Akron Fire EMS make all patient transports.

The potential impact this study could have on the Akron Fire Department is the adoption of a new policy that would require the Akron Fire ambulance to transport the non-emergency patient. This policy could face several hurdles that would need to be addressed:

- The increased likelihood of a fire suppression unit not being available due to fire personnel being occupied with increased EMS transports.
- The potential for an Akron Fire ambulance to experience extended wait times at area hospitals with patient transfers due to increased congestion levels within the hospital emergency departments.
- The associated costs of hiring additional clerical personnel to handle the increase in the EMS billing workload.

LITERATURE REVIEW

Ragone (2012) reported the results of the JEMS 200-City survey that reviewed the responses of 97 first responder and transport agencies. The survey was composed of 118 questions. When addressing the certification level of the personnel staffing their ambulances: The survey indicated that the majority (49%) of agencies that staff their ALS ambulance with one paramedic and one EMT. The survey further indicated that the minority (41%) of agencies require at least two paramedics on each ALS ambulance. The balance (9.8%) of the responses used one paramedic and one intermediate EMT on their ALS ambulance. When addressing the type of ambulance service provided: The tiered transport model used by Akron Fire was not cited as a category in the survey. The survey reported that the majority (39.6%) listed the primary transport agency as a private ambulance company. The survey also reported that the minority (37.4%) of fire departments are the primary transport agency. Third service and hospital based systems made up the balance (23%) of transport agencies. This survey makes it clear that the question of who controls the EMS industry is still subjective. The fire based EMS leaders must not take it for granted of what EMS in their organization could look like in the very near future.

Drum (1999) developed questionnaires that were sent to subject matter experts (SME) who were graduates of the class “Advanced Leadership Issues in Emergency Medical Services” from the National Fire Academy. Once completed these questionnaires were used to develop a survey that was sent to residents of Markham, Illinois. Of the 250 surveys mailed, 94 were returned completed (39.9%). The last category of the survey was identified as “Five issues comparing municipal and private EMS”. This section was the most compelling in its revelations of the differences between what the SME’s identified as the EMS needs and wants of the general public versus what the general public actually identified as their needs and wants. The survey

respondents placed a low priority as to whether the EMS provider was a part of the municipal fire or private ambulance service. The conclusion of Drum's research was that the municipal fire service must be pro-active by searching out the needs and wants of the general public and reacting to those needs. If the municipal fire service fails at this the private ambulance service will seize the opportunity to bid for these services.

As reported by Harms (n.d.) the Phoenix Fire Department assumed all ambulance service delivery for their city in 1985. They experimented with a number of EMS delivery models until 2006 when through a collaboration of Labor and Management they established their current model. Their goal was to reduce response times as well as reducing out-of-service times. In order to meet these needs they ultimately converted all of their BLS engines to ALS through equipment additions and staffing changes. They also adjusted their ambulance staffing to require one EMT and one paramedic when responding to an EMS event. In order to accomplish these changes they successfully lobbied for the creation and passage of a "Public Safety Tax, which allowed them to hire and train new firefighters, purchase new equipment, and increase the number of their training staff. By June of 2010 all of their initiatives had been completed as represented by a 10% reduction in response times and a decrease in their out-of-service times for an overall positive effect in their service delivery. This change proved to be beneficial to both the Phoenix Fire Department as well as the citizens of Phoenix.

Carter, Grierson (2007) reported on the results of a study that was conducted by the University of Manitoba Section of Emergency Medicine. The study focused on one of the six area hospitals in the province of Manitoba, Canada. The study looked at how ambulance total out-of-service times were affected by hospital diversions. The University tabulated the total out-of-service times for the year 2001 for this hospital when there was no diversion. They then

tabulated the total out-of-service times for the year 2002 for the same hospital when there was a diversion. Interim analysis allowed them a sample size of 1,049 from each group. The times from these totals were then compared and the result was that there was minimal difference between these two groups. This supports the practice of diverting EMS transports by bypassing the primary destination hospital. The findings of this study suggest that the practice of hospital diversions will not have a significant on EMS resource availability. The Akron Fire Department does not currently allow it's ambulances to divert to an outlying hospital. This purpose of this practice will need to be revisited in order to reduce the amount of time now spent waiting within the current primary destination hospitals.

Squire, Tomayo, and Tomayo-Sarver (2010) reported on ambulance transports based upon data queried from the National Hospital Ambulatory Medical Care Survey database. They looked at data from the time periods of 1997 to 2000 and 2003 to 2005. Their research indicated that patients with Medicare insurance were more likely (34%) to rely on ambulance transport than those with private insurance (11%). That those patients critically ill (57%) used ambulance transports as opposed to the non-critical (15%) patient. These statistics coupled with the anticipated increase of residents aged 65 and older (12% of the total population in 2006 to 16% in 2020) leads the authors to believe that the need for ambulance transports will increase as the population of the United States ages. As these numbers rise the potential for overcrowding of the hospital emergency departments is anticipated and in some areas it is already being seen. An aggressive look at an ambulance diversion policy is suggested in order to control the overcrowding issues of particular hospitals. These types of diversion policies will have to be worked out by all of the hospitals within an associated geographic area. In order for any diversion policy to be effective it will be important to include the area ambulance service

providers as a part of the group that establishes these policies, this will help to ensure their buy-in as well as to address any problems unforeseen by the hospitals.

Bresciani, Griffiths, & Rust (2009) reported on the research into the challenges of implementing job responsibility change within the educational staff of the North Carolina State University. Overcoming the resistance to change in job responsibility requires an organized approach by management in order for the change to successfully be accepted by the workforce. One theory used by the University was to adopt the works of Petrini and Holman's (1995) research into the six common beliefs that lie at the root of employee resistance to change. This set of beliefs was chosen as one beneficial concept used to address the problem of work adaptation in the workplace. The six common beliefs include the following: (1) One's needs are currently met by the traditional methods already in place, (2) The change will make it more difficult to meet one's needs, (3) The risks involved outweigh the possible benefits, (4) There is no basis for the change – it's just another plan to get more work out of us with fewer resources, (5) The organization is mishandling the change, and (6) The change will fail and go away (Petrini and Holman, 1995). By addressing these questions as part of a proactive organized approach the University was able to provide a degree of resolution to these questions for their staff. This ultimately led to a work force that could experience a higher level of job satisfaction. This same model of change could be embraced when making change within the fire service. Whereas it seems an easy fix to simply mandate an operational change within the fire service, the implementation and buy-in of that change by the employee can be more difficult. For the change to be truly successful it will require the employee to embrace and promote the change as well.

The IAFF Division of Technical Assistance & Information Resources publication *Emergency Medical Services, A Guidebook for Fire-Based Systems* (n.d.) lends advice on how to cost an EMS system. The publication states that in order to calculate the cost of a fire-based EMS system only the marginal costs of the service should be used. The marginal costs of providing EMS services are only those expenses that are above and beyond other fire department operating costs. As an example many of the administrative costs as well as the personnel costs of an EMS service are already incorporated under fire suppression services. By using only the marginal costs it reflects that fire-based EMS systems are very cost effective. Various costing models are presented in the article; the most equitable models include the number of responses as well as the number of transports being used in the final calculations. When comparing the effectiveness of a fire-based EMS system to those of a private EMS system it is important to also consider the efficiency of how all of the components of the emergency medical system fit together to provide the best service to the community. To simply consider only the single component of the ambulance transport is misleading, transportation alone does not represent patient care nor does it reflect the overall public service aspect of an EMS system.

The U.S. Center for Medicare & Medicaid Services (2012) indicates that the *Ambulance Fee Schedule* was implemented on April 1, 2002. Section 4531(b) (2) of the *Balanced Budget Act* added a new section to the social security act which mandates the payment of fees for ambulance services. These fees apply to all ambulance services whether the transport is considered non-emergency or emergency with a variety of BLS vs. ALS categories being qualified. The deductable portion of Medicare/Medicaid coverage will vary but cannot exceed 20% of the total ambulance fee. The City of Akron has chosen to waive the deductable portion and pursues only the insurance funded portion of the bill for all City of Akron residents. This

same consideration is not offered by the private ambulance service that conducts the non-emergency transport for the City of Akron. This guaranteed point of collection cannot be ignored. In 2011 the Medicare/Medicaid patient represented over 54% of the patients transported by Akron Fire ambulance service. As the “baby-boomer” population approaches retirement this number is sure to rise.

The United States Government Accountability Office (GAO) (2007) reported on Ambulance Providers: Costs and Expected Medicare Margins. GAO examined ground ambulance transports costs in 2004 and the factors that contributed to cost differences. They also looked at what the average ambulance transport Medicare payment would be in the proposed national fee schedule to be adopted in 2010. To obtain these costs GAO surveyed 215 ambulance providers that were not fire-based EMS ambulance providers. Fire-based EMS was not included due to the cost sharing that was an inherent part of the fire service; these ambulance costs would be less and would invalidate the study. Costs per transport varied from $99 per transport to $1,218, with the average being $415 per transport. GAO estimated that 39% to 56% of these providers without cost sharing would average Medicare payments above their average cost per transport. This report indicates that the private ambulance service costs are greater than those costs of the fire-based EMS ambulance due to the cost-sharing factor.

Carter, Cooney, Lawner, Millen, Nable, & Wallus (2011) explored how Emergency Medical Systems are impacted by impacted by hospital emergency department (ED) overcrowding. The ability of an EMS provider to respond to an acutely sick patient is dependent upon many variables. One of these variables is the increase in offload delay affecting EMS personnel at the hospital ED when overcrowding occurs. The offload delay is defined as the amount of time it takes from arrival of the ambulance at the ED to the transfer of the patient to

the ED staff. The offload delay has a direct impact on the capabilities of the EMS system when the EMS crew is delayed in returning back to service efficiently. One approach to alleviating ED overcrowding is Ambulance Diversion to neighboring hospitals. This is being increasingly utilized in most busy emergency medical systems. The theory supporting Ambulance Diversion is that the diversion will reduce the overall turnaround time of the ambulance during peak periods of ED overcrowding. There are many factors to be considered when looking at adopting a diversion practice; the geographic location of neighboring hospitals, the capabilities of all of the hospitals involved, and the number of ambulances available in a particular EMS system. An EMS system must be flexible enough to adjust to the environment it exists in. The ED overcrowding plays a significant part in this environment. The possibility of regular ambulance diversions must be a part of an EMS system in order to keep the entire system functioning smoothly and effectively.

The occurrence of ambulance transport delays for patients with chest pain was reported on by Schull, Morrison, Vermeulen, and Redelmeier (2003). The study was conducted over two 4-month periods using a single prehospital care provider, Toronto Emergency Medical Services. What was found was that ambulance diversions increased during peak periods of emergency department overcrowding. The average increase in transport time was 2.8 minutes for each patient diverted. This time in itself was not substantial until it was applied to the patient with ischemic chest pain. Through further research the authors estimated that for every 5000 patients with chest pain, 100 of them were candidates for thrombolytic therapy. Additionally is was hypothesized that a 30 minute delay in thrombolytic therapy can shorten the average survival of this category of patient by one year, a three minute delay might shorten their survival by as much as 0.1 year. This research indicates that if a diversion program is to be adopted then it should be

utilized on the non-critical patient before the emergency department becomes overcrowded, this in turn would keep the cardiac centers less crowded. Ambulance diversions did not appreciatively increase patient transport times in this particular study. What was shown was that the diversion process would have most likely been more productive if it had been used on a routine basis instead of waiting until the emergency department overcrowding situation had occurred.

Fire Service-Based EMS in the United States was studied and reported on by Katz, Pepe, Persse, & Pratt (2007). Their report first reviewed The Federal EMS Act of 1973 and its definition of an EMS system as being "an entity that provides for the arrangement of personnel, facilities, and equipment for the effective and coordinated delivery of health care services under emergency conditions in an appropriate geographic area". Their article further points out that the fire service is the agency that first delivers on-scene health care in an efficient and rapid manner during emergency conditions. A network of fire stations with established communications, response vehicles, and 24 hour manning response capabilities gives the fire service the best system for the delivery of EMS. The fire service is typically community based with a work force that normally has a low turnover rate with a high level of dedication exhibited by the employee. Additional data from their research also reflects that out of 200 of the largest cities in the United States, 97% have fire service-based prehospital emergency medical services. Another interesting part of the article cited data from emergency medicine literature indicating that the most likely time to create an error in medical care is when care is transferred from one provider to another. If the fire service first-responder can also be the agency that transports the EMS patient to an area hospital we can eliminate unnecessary errors in patient care. This article clearly points to the fire service as being the best keeper of prehospital EMS. Whereas the private ambulance service

may possess adequate numbers of personnel and equipment to fill a void in an EMS system, their response capabilities coupled with their lack of ties to a community leaves them coming up short of what the fire service prehospital care can offer.

In summary when comparing Fire Service based EMS to the private ambulance service the literature indicates that across the United States there is a near equal ratio of who provides that prehospital EMS service. The general public does not put a face upon who shows up at their door when they call an emergency service, as long as someone shows up to take care of their immediate problem they are satisfied. The structure to provide prehospital EMS is already established in most municipalities in the form of the Fire Service with facilities and manpower being in place to take on this role. A preponderance of the research conducted on hospital diversion programs indicated that an increase in ambulance transport times, which in turn effect the ambulance out-of-service times, are neglible and can benefit the patient if used correctly by reducing the overall time commitment of the ambulance. Funding and revenue are available for these services in the form of insurance billing for ambulance transports with Medicare & Medicaid setting the format for most ambulance services. In most municipalities the need for an ambulance service will most likely be satisfied with either the Fire Service based EMS or the private ambulance service. If the Fire Service based EMS is to change within the City of Akron it would require a revision in its current ambulance transport policy. When a change is necessary, and to ensure a successful change process, today's Fire Service leaders must not ignore the importance of obtaining buy-in from their employees if a policy change of significance is to be instituted.

PROCEDURES

A survey was developed and distributed to 148 Akron Fire Paramedics using "Survey Monkey®" as the collection vehicle, see Appendix 1 attachment. Anonymous survey responses were requested so as not to coerce the answers supplied. This survey was used to answer research questions #1 and #2:

1. Does waiting for a private ambulance response cause a delay in the transport times of the Akron Fire EMS patient?

2. Does the transfer of patient care from the Akron Fire ambulance to the private ambulance service generate complaints? What constitutes a complaint is a broad category of anything violating medical protocol or patient care. The complaint can be initiated by any healthcare professional or civilian who feels a complaint is justified.

Data from the Akron Fire Incident Reporting System (AFIRS) was analyzed. The total out-of-service time for Akron Fire ambulance transports were compared with total out-of-service times for the Akron Fire ambulance when the patient was transferred to a private ambulance. This was completed using a sampling of the EMS incidents from 2011. This analysis of times was used to answer research question #3:

3. What would be the impact on fire suppression coverage when the Akron Fire ambulance conducts the non-emergency transport?

The EMS billing company (Life Force) utilized by Akron Fire was interviewed and tasked developing an average on collections per Akron Fire ambulance transport, as well a breakdown of who was the predominant insurance payer from 2011. This interview was used to answer research question #4:

4. What would be the financial gain generated if the transport and subsequent billing of the non-emergency patient was conducted by the Akron Fire Department?

Definition of Terms

Code One Patients. "This category covers all minor illness or injury circumstances and the patient is in no danger of developing any significant symptoms." (Akron Fire Department Paramedic Protocol, 2012) No ambulance transport is necessary.

Code Two Patients. "This category is for individuals who have significant signs or symptoms of illness or injury and at this time are stable." (Akron Fire Department Paramedic Protocol, 2012) A non-emergency ambulance transport is necessary.

Code Three Patients. "This category is for the most seriously ill or injured patients." (Akron Fire Department Paramedic Protocol, 2012) An emergency ambulance transport is necessary.

Limitations of the Study

The model of ambulance transport utilized by the Akron Fire Department was not found in any of the research material available. The research conducted used a variety of sources to address different components of the Akron Fire ambulance transport policy.

Political sensitivity to the private ambulance service being an employer within the City of Akron will have significant impact upon the success of the recommendations of this research being adopted by the Akron Fire Department.

RESULTS

There were 66 responses to the survey that was distributed to the 148 Akron Fire Department (AFD) paramedics. Their responses indicated that the transport times of the AFD EMS patients are delayed by waiting on the arrival of a private ambulance. This rate of this delay ranges from occurring only occasionally (7.7% occurrence), occurring daily (56.9% occurrence), to occurring on every incident (30.8% occurrence).

The survey responses indicated that the patient medical coding is influenced by who transports the patient to the hospital. If a transport occurs during the hours between 7:30 am and 7:30 pm there is a possibility that the medical coding will be downgraded to non-emergency only occasionally (23.1% occurrence), occurring daily (12.3% occurrence), to occurring on every incident (1.5% occurrence). If a transport occurs between 7:30 pm and 7:30 am there is a possibility that the medical coding will be downgraded to non-emergency only occasionally (21.2% occurrence), occurring daily (16.7% occurrence), to occurring on every incident (3% occurrence).

The survey responses indicated that the patient medical coding gets downgraded to non-emergency in order to avoid AFD transport due to influence by other crew members. This occurs only occasionally (9.2% occurrence), occurs daily (1.5% occurrence), occurs on every incident (1.5% occurrence).

The survey responses indicated the patient medical coding gets downgraded to non-emergency in order to avoid an extended wait at the hospital. This occurs only occasionally (30.8% occurrence), occurs daily (15.4 occurrence), occurs on every incident (4.6% occurrence).

The survey responses indicated that if AFD expanded its ambulance transports to the "Satellite Hospitals" within Summit County (40.9%) of the paramedics would be receptive to the change and (59.1%) of the paramedics would be less receptive to the change.

The survey responses indicated that the AFD EMS patient care does suffer as a result of the transfer to a private ambulance service for transport. This occurs only occasionally (34.4% occurrence), occurs daily (15.6% occurrence), occurs on every incident (3.1% occurrence).

The survey asked if a medical complaint would be generated by the AFD paramedic when medical care issues arose as a result of the patient transfer to the private ambulance. The responses indicated this would be documented for every concern (64.6% occurrence), only on the most severe concern (33.8% occurrence), never documented (1.5% occurrence).

The total out-of-service times of the Akron Fire ambulance were analyzed when the Akron Fire ambulance conducted the emergency patient transport. These times were then compared to the total out-of-service times of the Akron Fire ambulance when the patient was transferred to the private ambulance for the non-emergency transport. The numbers of incidents utilized for this time study were based upon the Raosoft® sample size calculator. The incidents were confined to a three month period from 2011 using one Akron Fire ambulance. There were 950 incidents analyzed, leading to an average of 11 incidents per day. From this number there were a total of 523 patient ambulance transports completed, leading to an average of 6 transports per day. The 6 transports further broke down to: 2 emergency transports made by the Akron Fire ambulance, with an average out-of service time of 53 minutes and 4 non-emergency transports made by the private ambulance service, with the Akron Fire ambulance average out-of-service time of 30 minutes. If the Akron Fire ambulance had conducted the additional 4 non-emergency

transports this would have added up to an average total of 92 additional minutes of out-of-service time per day.

The EMS billing contractor Life Force was interviewed to assist in determining the potential financial gain that the City of Akron could have seen if the Akron Fire ambulance had made all patient transports occurring in 2011 (personal communication, May 31, 2013).

The Akron Fire ambulance transport rate set by City ordinance is $600 for ALS and $450 for BLS transports plus mileage, minus deductibles for City residents. The 2011 collections summary for the Akron Fire ambulance transports was as follows: An average of $249.80 per patient was collected, with a total figure of $1,715,486.60 seen for the year. The City also wrote off $547,482.91 in uncollected fees as waived deductable amounts for City residents during the 2011 year. Medicare represented the majority of those collections covering 54% of the patients and Medicaid represented 12% of the patients. The amount being paid by Medicare is currently set at $318.06 for ALS and $267.83 for BLS transports. The amount being paid by Medicare is currently set at $165.55 for ALS and $85.87 for BLS transports.

The private ambulance service utilized by the City of Akron has a rate set at $876.75 for ALS and 737.10 for BLS transports, plus mileage, plus add-ons. All deductibles amounts are pursued regardless of residency status. The 2011 collections for the private ambulance service transports were not disclosed at the time of this study.

DISCUSSION

The survey results of the AFD paramedics clearly indicate that there is a degree of delay in the transport of the EMS patient due to the wait on the private ambulance service. The survey results also show that there is a slight chance that the condition of the patient may be downplayed in order to avoid a hospital transport by the AFD personnel. These results indicate that at least a portion of the AFD paramedics are willing to trade off the wait for a private ambulance in order to avoid a hospital transport. This situation should never occur, but the design of the current patient transport system within the City of Akron Fire department makes it possible.

Literature review pointed to hospital overcrowding as the largest contributor to the delay in EMS patient offload time, this in turn causes longer out-of-service times for the EMS provider. An aggressive, well coordinated diversion plan would help to combat the delay in ambulance turnaround times at the emergency room when it is accepted and utilized by all hospitals within a geographic area (cited in three of the literature articles). The Akron area hospitals will divert patients after they experience overcrowding. The take home point from this literature review is for the Akron area hospitals to initiate diversions to the outlying satellite hospitals prior to overcrowding occurring. In order to take advantage of the additional diversions the Akron Fire ambulance would need to expand the hospitals it transports to. With these changes the delays in EMS patient offload time would be minimized, this would lead to a quicker ambulance turnaround time at all of the hospitals.

Katz (2007) found that “when transfer of medical care occurs is the time when errors take place”. This idea is also mirrored in the survey results of the AFD paramedics. Errors in medical care can be reduced by eliminating the repetitive changes in who is providing that individual

medical care to the patient. Providing continuity of care by the same caregiver is critical. Additional literature (Squire 2010) points to the predicted rise in the percentage of the population over the age of 65 from 12% to 16% by 2020. We would expect an equal increase in the use of EMS ambulance hospital transports and an increase in the number of errors made when the transfer of patient care occurs. The responsible EMS provider owes their customer the best service possible; this can be reflected by reducing the chance for errors in medical care to occur in the field wherever possible. One of these potential areas of error in medical care is seen when the AFD ambulance transfers their patient to the private ambulance service for hospital transport. Elimination of this patient transfer, with the Akron Fire ambulance completing the transport of the patient to the hospital, would reduce the chance for medical errors to occur.

The time analysis indicated that an average of 2 AFD ambulance hospital transports per day were conducted, taking 53 minutes per incident – this is from the time the call was initiated until the unit is back in service after leaving the hospital. When the AFD ambulance transferred the patient to the private ambulance service they were able to be back in service on an average of 30 minutes per incident, with 4 of these occurring per day. Yes - there would be an impact on the fire suppression capabilities of AFD if AFD conducted all patient ambulance transports, but this impact would be minimal. This impact would be seen as an average additional 4 hospital ambulance transports per AFD ambulance being made within a 24 hour period. On average this would be reflected as a potential 92 minutes of reduction in fire suppression capabilities per station, per day, due to the corresponding fire suppression unit being out-of-service. Keep in mind that the AFD ambulance is already assessing and treating these patients, they would now simply need to complete the ambulance transport.

The financial analysis of 2011 EMS billing for ambulance transports indicated that the Akron Fire ambulance emergency transport fee was less than the private ambulance service non-emergency transport fees. Compound this with the private ambulance service not waiving deductable amounts when pursuing collections and you find the complaint by the patient over the billing discrepancy as being well founded; there would be many more of these types of complaints if the average patient realized the difference between the services and fees provided to them.

The number of ambulance transports turned over to the private ambulance service in 2011 could have generated an estimated additional amount of $3,321,590.60 available to the City of Akron if Akron Fire had conducted the ambulance transport of these patients. This figure is based on the average ambulance transport rate collected by Akron Fire in 2011; this average takes into account ALS vs. BLS rates, waived deductable amounts, and the non-paying patient. Ambulance billing collections for the City of Akron in 2011 could have totaled $5,037,077.20 as opposed to the $1,715,486.60 that was collected. These numbers would be available to the City's General Fund and should not be overlooked by the City of Akron.

The Akron Fire Department must evaluate its current policy on ambulance transports. AFD can no longer conduct business as it always has been done in the past. What is best for the civilian patient must now play a more prominent role in their ambulance transport policy. AFD should initiate a policy change that eliminates the use of the private ambulance service. The AFD ambulance should be the ambulance used if the patient needs to be transported to the hospital. This change will strengthen the AFD EMS system by reducing medical errors, reducing medical complaints, along with bringing additional revenue to the general fund of the City of Akron.

RECOMMENDATIONS

Establish a trial period for a minimum of six months using three of the Akron Fire ambulances. During this trial period these Akron Fire ambulances will conduct all of the ambulance transports for their patients that need to be transported to the hospital. Data from this trial will then need to be studied to determine if a wholesale change in the AFD transport policy should be adopted.

AFD data from this trial to be evaluated:

1. Patient transport times.
2. The number and category of complaints generated.
3. Ambulance out-of-service times and the hospital turn-around times of each ambulance.
4. Ambulance billing and the subsequent collections segregated by emergency and non-emergency categories.

Establish a no-cost electronic interface between the AFD EMS records database and the medical billing company currently utilized by AFD. This interface will streamline the EMS billing workload that will significantly increase as a result of this study.

Develop a plan that explains and involves line personnel in the incorporation of this trial period policy prior to activating it. This plan should include sessions of two way communication with all personnel in order to fully explain new procedures, receive productive suggestions, as well as fully answering all questions.

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APPENDIX 1 – Akron Fire Department Paramedic Survey

See the following pages for survey results.

Akron Fire EMS - Private Ambulance Transports

1. Are the on-scene times of the Akron Fire ambulance run extended in order to await the arrival of AMR ambulance?

	Response Percent	Response Count
On every run.	7.7%	5
Not on every run, but occurring at least once during the shift.	**56.9%**	**37**
Not during every shift, but occurring on occasion.	30.8%	20
Does not occur.	4.6%	3
answered question		**65**
skipped question		**1**

2. During the day hours of 0730 to 1930 is your medical coding of the EMS patient effected by who transports the patient to the hospital?

	Response Percent	Response Count
On every run.	1.5%	1
Not on every run, but occurring at least once during the shift.	12.3%	8
Not during every shift, but occurring on occasion.	23.1%	15
Does not influence my decision.	**63.1%**	**41**
answered question		**65**
skipped question		**1**

3. During the evening hours of 1930 to 0730 is your medical coding of the EMS patient effected by who transports the patient to the hospital?

	Response Percent	Response Count
On every run.	3.0%	2
Not on every run, but occurring at least once during the shift.	16.7%	11
Not during every shift, but occurring on occasion.	21.2%	14
Does not influence my decision.	**59.1%**	**39**
	answered question	**66**
	skipped question	**0**

4. Do other members of your crew influence your medical coding of the EMS patient in order to avoid the ambulance transport of the patient?

	Response Percent	Response Count
On every run.	1.5%	1
Not on every run, but occurring at least once during the shift.	1.5%	1
Not during every shift, but occurring on occasion.	9.2%	6
Does not influence my decision.	**87.7%**	**57**
	answered question	**65**
	skipped question	**1**

5. Is your medical coding of the EMS patient effected by the possibility of an extended wait time (greater than 15 minutes) at the hospital in order to complete the patient tranfer?

	Response Percent	Response Count
On every run.	4.6%	3
Not on every run, but occurring at least once during the shift.	15.4%	10
Not during every shift, but occurring on occasion.	30.8%	20
Does not influence my decision.	**49.2%**	**32**
	answered question	**65**
	skipped question	**1**

6. If Akron Fire expanded its ambulance transport policy to include the satellite hospitals within Summit County in order to reduce patient transfer times would you be....

	Response Percent	Response Count
More receptive to Akron Fire EMS patient transports.	40.9%	27
Less receptive to Akron Fire EMS patient transports.	**59.1%**	**39**
	answered question	**66**
	skipped question	**0**

7. When transferring the EMS patient to AMR for hospital transport does the medical care of the patient suffer as a result of the transfer?

	Response Percent	Response Count
On every run.	3.1%	2
Not on every run, but occurring at least once during the shift.	15.6%	10
Not during every shift, but occurring on occasion.	34.4%	22
Does not occur.	**46.9%**	**30**
answered question		**64**
skipped question		**2**

8. If a concern over the medical care of the EMS patient occurred as a result of the patient's transfer from Akron Fire to AMR would you document and forward the concern to the proper party?

	Response Percent	Response Count
Every concern would be documented.	**64.6%**	**42**
Only the most severe concern would be documented.	33.8%	22
Concerns are never documented.	1.5%	1
answered question		**65**
skipped question		**1**